



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/930,665	08/15/2001	Sudhindra Pundaleeka Herle	SAMS01-00152	3249

7590 11/01/2005

Docket Clerk
P.O. Drawer 800889
Dallas, TX 75380

EXAMINER

FERRIS, DERRICK W

ART UNIT PAPER NUMBER

2663

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/930,665	HERLE ET AL.	
	Examiner	Art Unit	
	Derrick W. Ferris	2663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. This Office action is in response to applicant's paper filed 8/22/2005. **Claims 1-20** as originally filed are currently pending.
2. Examiner does **not withdraw** the obviousness rejection to *Takagi '733* in view of *Takagi '148* for some of the claims (see below). The following comments fully address applicant's arguments with respect to the rejection. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., whether the TCP segments transmitted *to the network* interface are the same size or different size than the TCP segments received from the network) are not recited in some of the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In particular, independent claims 1 and 9 recite a first maximum transmission unit size and a second maximum transmission unit size. The claims do not further recite that the first maximum transmission unit size and a second maximum transmission unit size are *different* sizes. These claims also do not recite that going *in one particular direction* the maximum unit sizes are different (i.e., going from a wireless network to a wireline network where the MTU size is increased and the packets are aggregated as further recited e.g., in claim 5 and independent claim 15). As such, *Takagi '733* teaches a TCP relay unit 100 (i.e., a packet relay controller) that transmits packets having a different maximum transmission unit for the asymmetric network. As an example, a TCP relay unit 100 adjusts the maximum transmission unit between a symmetric network such as network 610 and an

Art Unit: 2663

asymmetric network such as network 620 as illustrated in figure 3. Thus the maximum transmission unit length of the packets going from network 610 to network 620 are different meeting the recited claim limitations.

Applicant's arguments are persuasive for some of the recited dependent claims and independent claim 15. Thus the rejection is **withdrawn** for these claims. However, as the claims contain linking claims and applicant's argument consists of limitations not recited in the claims, please find multiple new rejections in order to expedite prosecution. As the following rejections are new, the current rejection is made non-final.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1, 3-8, and 10-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,091,733 A to *Takagi et al.* ("*Takagi I*") in view of U.S. Patent No. 6,272,148 B1 to *Takagi et al.* ("*Takagi II*").

As such to **claim 1**, *Takagi I* discloses a packet relay device as TCP relay unit 100, see e.g., figure 3. In particular, a connection to a packet network is taught e.g., as the connection to network 610. A packet relay controller intercepting traffic between networks and reformatting the intercepted traffic to employ a first maximum transmission unit size for intercepted traffic forwarded to the packet network and a second maximum transmission size for intercepted traffic forwarded to another network is taught by the

Art Unit: 2663

actions of the TCP relay unit 100, see e.g., column 3, lines 20-45 where the TCP size is adjusted by the relay unit. As the TCP size is adjusted, a first and second maximum size for a packet is taught since the TCP size is adjusted in at least one direction. The packets are also reformatted based on new segment size.

Takagi I may be silent or deficient to the further limitation of a wireless network. However, as wireless can be asymmetric, *Takagi I* may teach a wireless network, see e.g., column 9, lines 5-10 since the TCP relay device 100 is between a symmetric network 610 and an asymmetric network 620. However, assuming the above limitation is not clear from the reference, the examiner notes the following obviousness rejection below.

Takagi II teaches the further recited limitation above at e.g., figure 1.

The proposed modification of the above-applied reference(s) necessary to arrive at the claimed subject matter would be to modify the TCP relay unit 100 to include a wireless interface as taught by *Takagi II* as part of the gateway device 900 with respect to a TCP relay unit 600 (i.e., for the purpose of the rejection the TCP relay unit 100 and gateway device 900 are the same where the asymmetric network 620 is the wireless network).

As such, examiner notes that it would have been obvious to one skilled in the art prior to applicant's invention to include the above limitation. In particular, the motivation for modifying the reference or to combine the reference teachings would be to transmit data of a wireless network in order to reach remote subscribers. In particular, *Takagi II* cures the above-cited deficiency by providing a motivation found at e.g., figure 2 where the radio terminals are remote subscribers. In addition, *Takagi II* also teaches using an

asymmetric network as a wireless network e.g., at column 11, lines 25-35. Second, there would be a reasonable expectation of success since both reference teach transmitting TCP segments through a gateway. Thus the references either in singular or in combination teach the above claim limitation(s).

As to **claims 3**, an optimal segment size is chosen based on the properties of the link such as the acknowledgments. In addition, *Takagi II* also teaches using different segment sizes as taught e.g., at column 11, lines 25-35.

As to **claim 4**, see combination of claims 1 and 3.

As to **claims 5**, see e.g., column 12, lines 33-36 of *Takagi II* with respect to reassembling divided packets.

As to **claims 6**, see e.g., column 3, lines 20-34 of *Takagi I* with respect to fragmenting.

As to **claims 7**, see e.g., similar rejection to claim 1 where the relay device is an Internet protocol level proxy within an interface between a wireless communications system and an internal packet network for an enterprise operating the wireless communications system. In particular, the relay device acts as a proxy and handles IP traffic.

As to **claims 8**, see e.g., similar rejection to claim 1.

As to **claims 10**, see e.g., similar rejection to claim 3.

As to **claims 11**, see e.g., similar rejection to claim 4.

As to **claims 12**, see e.g., similar rejection to claim 5.

As to **claims 13**, see e.g., similar rejection to claim 6.

As to **claims 14**, see e.g., similar rejection to claim 7.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1-4, 6-11, 13, and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,212,190 B1 to *Mulligan et al.* ("*Mulligan*") in view of "Adaptive Frame Length Control for Improving Wireless Link Throughput, Range, and Energy Efficiency" to *Lettieri et al.* ("*Lettieri*").

As such to **claim 1**, *Mulligan* discloses e.g., in figure 3 (as a simplified example) a packet relay controller as router 306 which is connected to two different networks, network 1 and network 2. Thus the router 306 intercepts traffic between the two networks and reformats the intercepted traffic to employ a first maximum transmission unit size for intercepted traffic forwarded to a first network and a second transmission unit size for intercepted traffic forwarded to the second network. In particular, *Mulligan* teaches that the different networks, such as network 1 and network 2, have different MTU sizes, see e.g., figure 4a where each network has a different MTU size. As such, the traffic between the router is reformatted in order to traverse the network. In transmitting the traffic from the router, the information is limited by the MTU size for each network. Thus the above limitation is met. In addition, the router is further able to fragment the information to further meet the MTU value, see e.g., column 7, lines 55-65 of *Mulligan*.

Mulligan may be silent or deficient to the further limitation of network 1 being a wireless network thus having a wireless link as claimed. *Mulligan* in the background further teaches that networks are known in the art to be wireless, see e.g., column 1, lines 53-65. Thus the background of *Mulligan* in combination may inherently teach a wireless link since a network can be wireless.

Lettieri also expressly teaches the further recited limitation above in combination at e.g., Section I A on page 564 since *Lettieri* teaches that wireless networks are known in the art and that wireless networks may also have a different MTU size than a wire-line network. In particular, the teachings of *Lettieri* teach using an adaptive MTU size on every link or hop. *Lettieri* further teaches using fragmentation, see e.g., Section IC on page 565.

The proposed modification of the above-applied reference(s) necessary to arrive at the claimed subject matter would be to modify *Mulligan* by clarifying that network 1 is a wireless network and thus connects to router 306 (i.e., packet relay controller as claimed) via a wireless network. In addition, the further combination teaches that the wireless network also has a separate MTU size (i.e., *Mulligan* teaches that each different network has a separate MTU size and *Lettieri* also teaches that wireless networks in particular have a separate MTU size).

As such, examiner notes that it would have been obvious to one skilled in the art prior to applicant's invention to include the above limitation. In particular, the motivation for modifying the reference or to combine the reference teachings would be that wireless networks have different physical properties than a wire-line network which impacts the

MTU size. In particular, *Mulligan* cures the above-cited deficiency by providing the above motivation found at e.g., the abstract. Second, there would be a reasonable expectation of success since *Mulligan* teaches that the scheme involves no changes to the above layers, see e.g., bottom left-hand column on page 565 and that the scheme is implemented at a transmitter that could be an intermediate device, see e.g., top-right hand column on page 565. Thus the references teach the above claim limitation(s).

As to **claim 2**, *Mulligan* teaches that it is recommended that the wireless network have an MTU size that is less than a packet network, see e.g., left-hand column on page 570 where the MTU size of the wireless network is 1500 bytes or smaller based on the error rate of the network (i.e., a wireless network typically has a higher bit error rate such that the MTU size will be smaller). Examiner notes a same motivation is applied using the secondary reference.

As to **claim 3**, both references teach using an optimal path MTU since the largest MTU size is recommended. *Mulligan* specifically teaches the above concept at e.g., Section Ia on page 564. Examiner notes a same motivation is also applied using the secondary reference.

As to **claim 4**, see similar rejection to claim 1.

As to **claim 6**, see e.g., column 7, lines 55-65 of *Mulligan* and left-hand column on page 565 of *Lettieri* with respect to fragmenting.

As to **claim 7**, see e.g., figure 3 of *Mulligan* where router 306 is a relay for TCP such that the router is a proxy that supports IP.

As to **claims 8**, see e.g., similar rejection to claim 1.

Art Unit: 2663

As to **claims 9**, see e.g., similar rejection to claim 2.

As to **claims 10**, see e.g., similar rejection to claim 3.

As to **claims 11**, see e.g., similar rejection to claim 4.

As to **claims 13**, see e.g., similar rejection to claim 6.

As to **claims 14**, see e.g., similar rejection to claim 7.

7. **Claims 2, 4, 9, 11, and 15-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,721,334 B1 to *Ketcham* in further view of U.S. Patent No. 6,728,365 B1 to *Li et al.* (“*Li*”).

As to **claim 2**, *Ketcham* teaches that each network has an MTU. In particular, *Ketcham* teaches using different networks.

However, *Ketcham* may be silent or deficient to the further limitation of wherein the first maximum transmission unit size is larger than the second maximum transfer unit size. In particular, *Ketcham* teaches that a known packet network size is e.g., 1526 bytes, column 2, lines 61-67 but may be silent or deficient (i.e., not expressly teach) on the MTU size of a wireless network.

Li teaches that it is known in the art that wireless networks should have a smaller MTU size thus teaching the above limitation, see e.g., column 8, line 66 – column 9, line 6.

Thus the examiner proposes to modify *Ketcham* to clarify that it is well established in the art that wireless links can have a lower MTU size thus teaching the above limitation.

Hence the examiner notes that it would have been obvious to one skilled in the art prior to applicant's invention to include the above limitation. The motivation for including the above limitation would be to allow efficient transmission along a radio path. As such, *Li* teaches the above motivation at e.g., column 8, line 66 – column 9, line 6.

As to **claim 4**, see similar rejection to claim 2 (i.e., the motivation for claim 2).

As to **claim 9**, see similar rejection to claim 2.

As to **claim 11**, see similar rejection to claim 4.

As to **claim 15**, see similar combined rejections for claims 1 and claim 2.

As to **claim 16**, see similar rejection to claim 2.

As to **claim 17**, see similar rejection to claim 3.

As to **claim 18**, see similar rejection to claim 4.

As to **claim 19**, see similar rejection to claim 5.

As to **claim 20**, see similar rejection to claim 6.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. **Claims 1, 3, 5-8, 10, and 12-14** are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,721,334 B1 to *Ketcham*.

As to **claim 1**, see e.g., figure 3 where the packet relay controller is taught as router 308, a wireless link is taught as part of network 106 and a packet network is taught as digital network 110. In particular, *Ketcham* teaches that networks 106 and 110 are packet networks where one of the networks is a wireless network and the other network is the Internet, see e.g., column 4, lines 30-35. Since router 308 is in between the two networks the router intercepts traffic. With respect to a packet relay controller that reformats the intercepted traffic to employ a first maximum transmission unit size for intercepted traffic forwarded to a first network and a second transmission unit size for intercepted traffic forwarded to the second network note that the router 308 in figure 3 aggregates and de-aggregates the traffic thus teaching the above limitation, see also column 4, lines 37-52. *Ketcham* further teaches that the number of packets aggregated/de-aggregated is further limited by the maximum packet size in the network, see e.g., column 2, lines 61-67 and column 7, lines 33-41. In particular, note that *Ketcham* teaches that different networks are possible. Thus each packet has a maximum packet size or maximum transmission unit size also teaching a first maximum transmission unit size and a second maximum transmission unit size.

As to **claim 3**, *Ketcham* teaches using an optimal path since the largest packet size is selected, see e.g., column 2, lines 13-29. Also, note that a router 314 or a host 116 are the final destination of the packet within a packet network.

As to **claim 5**, the router 308 performs aggregation, see e.g., figure 3.

As to **claim 6**, the router 308 performs de-aggregation (i.e., fragments), see e.g., figure 3.

Art Unit: 2663

As to **claim 7**, with respect to IP, see e.g., column 4, lines 30-36 with respect to sending packets over the Internet.

As to **claim 8**, see similar rejection to claim 1.

As to **claim 10**, see similar rejection to claim 3.

As to **claim 12**, see similar rejection to claim 5.

As to **claim 13**, see similar rejection to claim 6.

As to **claim 14**, see similar rejection to claim 7.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derrick W. Ferris whose telephone number is (571) 272-3123.

The examiner can normally be reached on M-F 9 A.M. - 4:30 P.M. E.S.T.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571)272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Derrick W. Ferris
Examiner
Art Unit 2663

Application/Control Number: 09/930,665

Page 13

Art Unit: 2663


DWF


10/31/65
DERRICK FERRIS
PATENT EXAMINER